

USSN 09/801,484

**REMARKS****The Claims**

The status of the claims is as follows.

Claims 1-28 have been rejected under 35 U.S.C. 102(e) over Ito et al.

**Rejections over Ito et al.**

We respectfully submit that the solicited claims are not anticipated by Ito et al. (U.S. Patent No. 6,445,409).

We note that the filing date of Ito et al. is less than one year prior to the priority date of the instant application. In the Supplemental Response filed on March 10, 2004, Applicant provided the declaration of the inventor Ray M. Broemmelsiek under 37 C.F.R. 131 establishing a date of invention in this country prior to the filing date of the Ito reference.

We respectfully traverse the Examiner's contention that the evidence submitted is insufficient to establish conception of the invention prior to the effective date of the Ito reference because the subject matter presented is not what appears in the claims (form paragraph 7.61 only; MPEP 715 III). We respectfully submit that the evidence submitted in Mr. Broemmelsiek's declaration demonstrates the conception of each and every aspect of the method and apparatus for detecting a moving object of interest that is discussed in the Specification and the claims as originally filed.

The Specification notes on pages 1 and 2 that there are several shortcomings in current video surveillance systems that need to be overcome for widespread use of automatic detection and collection of relevant video data in response to scene stimulus without the need of a human operator present. Automatically detecting and accurately and reliably collecting image information of a moving object using a motion video camera is a difficult task.

This is accomplished in one embodiment of the invention, as set forth in Claim 1 for example, by providing:

"A method for detecting a moving object of interest, having a characteristic with a predetermined value, in a field of view of a motion video camera using a video signal received from the motion video camera, said method comprising the steps of:

Attorney Docket No. C4-971C

USSN 09/801,484

receiving an object qualifying parameter representative of the characteristic with the predetermined value of the moving object of interest;

detecting moving objects to determine the value of the characteristic of the moving object of interest for each detected moving object;

determining if a value of the characteristic for each detected moving object is within a predefined tolerance of the predetermined value of the moving object of interest; and

generating an indication of detected moving objects having the value of the characteristic within the predefined tolerance."

Mr. Broemmelsiek's declaration includes copies of several documents related a closed-loop autonomous tracker/controller for use with a video surveillance system that embodies the invention. Each of the above-recited elements is set forth, for example, in at least sections 3 and 4 of the "Statement of Work for the Phase 2 Autonomous Tracker/Controller Project" (and elsewhere), as illustrated in the following chart:

Claim language	Non-Exclusive Examples of Support
1. A method for detecting a moving object of interest, having a characteristic with a predetermined value, in a field of view of a motion video camera using a video signal received from the motion video camera, said method comprising the steps of:	Section 3.0:  Specifically, the subcontractor shall help establish the technology concept design, help establish a detailed system design, and write specific code modules that will either execute within a target PC initially, and then as embedded system code, to drive a Sensoromatic UltraDome for the purpose of automatically discriminating a target and successfully tracking that target in clutter by manipulating the UltraDome control signals to keep the target within view. The work performed on this project shall take place in
receiving an object qualifying parameter representative of the characteristic with the predetermined value of the moving object of interest;	Section 4.2:  It detected, based upon a sensitivity of detection setting. A touchscreen allowed the user to select a highlighted object on the screen for automatic tracking by the system. An RS-422 control channel from the PC sent commands to manipulate the UltraDome camera orientation so that it tracked the locked-on object. Video from the UltraDome went back to the Spin  ...  • The markers/overlays on the video shall be selectable (on/off) by the user. The user selects an object to track via the touchscreen, and the system automatically tracks that object (or informs the user that it can't lock onto that particular object).
detecting moving objects to determine the value of the characteristic of the moving object of interest for each detected moving object;	Section 4.2:  Logic PCA for display on the system display. The Phase 1 system was capable of tracking 4 independent objects in background clutter.  ...  UltraDome instead of in the local PC/Workstation. It is intended that this Phase 2 system be capable of tracking 8 independent objects in background clutter. Color discrimination is not mandatory for Phase 2. In order to move
determining if a value of the characteristic for	Section 4.2:

Attorney Docket No. C4-971C

USSN 09/801,484

each detected moving object is within a predefined tolerance of the predetermined value of the moving object of interest; and	<ul style="list-style-type: none"> <li>Phase 2 shall add the capability for polygon exclusion. The reason for this is that a slowly swaying tree may be treated as a viable target by the system, and the user may want to exclude that specific polygonal area from consideration for acquiring new target tracks.</li> </ul>
generating an indication of detected moving objects having the value of the characteristic within the predefined tolerance.	<p>Section 4.2:</p> <p>the locked-on object. Video from the UltraDome went back to the Spin Logic PCA for display on the system display. The Phase 1 system was</p> <p>...</p> <ul style="list-style-type: none"> <li>The markers/overlays on the video shall be selectable (on/off) by the user. The user select an object to track via the touchscreen, and the</li> </ul> <p>...</p> <ul style="list-style-type: none"> <li>Phase 2 shall add the capability to glue or unglue a target, so that it is locked-on for tracking regardless of other viable targets. This function shall be user selectable.</li> </ul> <p>...</p> <ul style="list-style-type: none"> <li>Phase 2 shall also add the capability for zoom sampling of tracked objects. This function shall be user selectable. The duration of the zoom sampling shall be 3 seconds.</li> </ul>

As a further embodiment of the invention, Claim 4 recites:

"A method for reducing information in a video signal having a plurality of frames received from a motion video camera with a field of view, wherein each of said frames has a data set, said method comprising:

detecting moving objects in the field of view of the motion video camera;  
 selecting objects of interest from said detected moving objects; and  
 creating a data set for each frame of the plurality of frames in the video signal based on detected moving objects."

As discussed in the Specification on pages 2-4 (and elsewhere), an object of the invention is to provide a motion video tracking filter for use in data reduction. Motion video data is one of the most useful yet one of the most resource intensive data types. While motion video can provide a large amount of data, often only a small portion of this data is relevant to a task being performed. The video data needs to be filtered to produce a data set that includes only objects of interest to the user. Such filtering allows processing to be performed only when it is needed – reducing processing time.

Evidence of conception of this aspect of the invention is also provided in the materials accompanying Mr. Broemmelsiek's declaration. For example, the "Tracker Development Task Estimates" notes on pages 2 and 4:

Attorney Docket No. C4-971C

USSN 09/801,484

There are two sets of elements requiring run-time access to optimize for the test set. The first set of elements are the video tracking filter parameters. These must be accessible during run-time in order to effectively tune the system. The second set of elements are the identified targets and their tracks. These will be used for tuning the dome's dynamics and look-and-feel manual target selection.

Filter parameters will be accessible via a Windows-based GUI. They will also be passed between the Video Processor Board and the NT host application for dynamic control via real-time inter-processor communications. Target identification and tracks will be provided initially as graphic overlays to processed video output so that the look-and-feel may be refined between the touch-screen and the video tracker's perceived identified target. Once accomplished, direct video out from the dome camera will be used for the touch screen display.

...

	support the current application.
Tracker run-time adjustment of filter parameters	<ul style="list-style-type: none"> <li>• Detection threshold</li> <li>• Track confirmation thresholds</li> <li>• Gate sizes</li> <li>• Kalman filter parameters (Q, R, etc.)</li> <li>• Latency prediction time</li> </ul>

While the support of the elements of independent Claims 1 and 4 have been illustrated herein for purposes of illustration, we respectfully note that conception of each and every element of all of the solicited claims (both dependent and independent) is similarly demonstrated by the submitted documentation.

We respectfully note that MPEP 715 III under form paragraph 7.61 indicates that "An explanation of the deficiency in the showing of conception must be presented..." However, the Office Action only states the conclusion that "The statement of work submitted in the affidavit does not contain any of the claimed elements."

Because conception of each and every element in the claims appears to be clearly contained in the submitted documentation, we respectfully request that the Examiner state on the record the claimed elements that the Examiner feels are not present – so that they may be properly addressed by the Applicant in an effort to avoid the need for a costly and time-consuming appeal in this case.

USSN 09/801,484

In regard to the remainder of the Office Action, we respectfully disagree with the Examiner's conclusion that Applicant agrees with every other aspect of the rejection. Applicant has traversed the entirety of the rejection. Moreover, as evidenced by the documentation provided by the Applicant, Ito is not prior art to the claimed invention and therefore we respectfully submit that a rejection under 35 USC 102(e) of any of the solicited claims is not appropriate.

However, in regard to the aspects of the invention specifically recited in Claims 7 and 17, we respectfully note that the sections of Ito referred to by the Examiner merely discuss object tracking and storage of information, but do not disclose the data filtering aspects of the invention set forth in the solicited claims, e.g., "if said current frame contains at least one selected object of interest, generating a data representation of said at least one selected object of interest and associating said data representation with said data set of said current frame; if said current frame does not contain at least one selected object of interest, marking said data set for said current frame as empty."

For example, as indicated in the above-cited portions of the Tracker Development Task Estimates, one set of elements may be the video tracking filter parameters, while a second set of elements may be the identified targets and their tracks.

In addition, as discussed in the Specification on pages 2-4 (and elsewhere), one object of the invention is to provide a motion video tracking filter for use in data reduction. Motion video data is one of the most useful yet one of the most resource intensive data types. While motion video can provide a large amount of data, often only a small portion of this data is relevant to a task being performed. The video data needs to be filtered to produce a data set that includes only objects of interest to the user. Such filtering allows processing to be performed only when it is needed – reducing processing time.

One manner in which this may be achieved is by "by determining if a current frame of the plurality of frames contains at least one selected object of interest; and if said current frame contains at least one selected object of interest, generating a data representation of said at least one selected object of interest and associating said data representation with said data set of said current frame; and if said current frame does not contain at least one selected object of interest, marking said data set for said current frame as empty" as recited in the solicited claims.

Attorney Docket No. C4-971C

USSN 09/801,484

We respectfully submit that this is nowhere disclosed in Ito et al. The Ito reference does not disclose the determination of each frame of video as to whether or not to create a data representation and associate it with the data set for that frame or mark the set empty, as in the claimed invention. Ito et al. is silent as to any advantage to be gained by determining each frame in a plurality of frames of the video in the manner claimed.

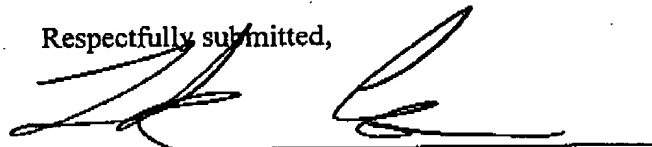
In the Ito reference, a data representation is presumably created for each frame of the video stream and stored as a data set. The Ito reference does not disclose associating the data designation with a data set if the frame contains an object of interest and designating a data set as empty for each frame in which an object of interest is not detected.

Column 18, lines 16-33 of the Ito reference (relied upon by the Examiner) merely discusses the function of determining if a detected object is to be classified as one to be monitored or if it is to be discarded, and if so, then generating an alarm signal. The alarm/monitor display step 109 refers to "transmitting information to a guardsman...the alarm about the presence or absence of an intruder." (Column 17, lines 11-16). As noted in column 17, lines 3-6, "...[T]he output I/F 607 emits light indicating an alarm in an alarm lamp 610, while the image output I/F 608 displays an alarm on the monitor 611 (alarm/monitor display step 109)."

For the reasons set forth above, we respectfully request that the rejection under 35 USC 102(e) be withdrawn and we respectfully submit that the solicited claims are in proper condition for allowance, which action is respectfully requested.

8/30/04  
Date

Respectfully submitted,

  
Frank A. Cona  
Registration No. 38,412

**MAILING ADDRESS:**

Frank A. Cona, Esquire  
Tyco Fire & Security Services  
One Town Center Road  
Boca Raton, FL 33486  
561-981-4366 (phone)  
561-892-0565 (facsimile)

Attorney Docket No. C4-971C